DDA 81-0850

24 APR 1981

MEMORANDUM FOR: Director of Personnel Policy, Planning, and Management

FROM: Max Hugel
Deputy Director for Administration

SUBJECT: Position Descriptions for the Information Handling Systems Architect Staff

1. Attached for your review are position descriptions for the Information Handling Systems Architect (IHSA) Staff. Upon completion of your review, these descriptions should be added to the IHSA position description, already approved as an SIS-3, and placed on the Office of the DDA staffing complement. Pending the allocation of ceiling, these positions should appear as "non-count".

2. The position description for the Deputy, IHSA contains duties which are unique to this position, however, the Deputy will also serve as one of the Staff's technical experts (Systems Software, Systems Development, or Communications). Therefore, although there are five descriptions attached, only four of these will appear on the staffing complement.

3. Since the IHSA Staff has Agency and Community-wide responsibility, I believe Senior Intelligence Service ceiling for the Deputy, IHSA position should be allocated from the DCI reserve. As you will recall, this course was followed for the IHSA position.

4. Position descriptions for the two remaining members of the IHSA Staff, a programmer and a secretary-steno, will be forwarded in the near future.

/s/ William N. Hart

Max Hugel

Attachments:
As Stated

Distribution:
1 - Addee (w/atts)
1 - MH (chrono wo/atts)
1 - DDA Subject (w/atts)
1 - DDA Chrono (wo/atts)
1 - CMO Subject (w/atts)
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Deputy to the IHSA Proposed Grade -- SIS 1/2

A. Position Identity

Deputy Information Handling Systems Architect, (IHSA) DDA, Position 0000. The Deputy reports to the IHSA and is the lead professional technologist in the office. He provides both an in-depth knowledge of the Agency and the professional leadership to a multidisciplinary senior staff of information handling systems technologists. Collective expertise of the staff includes software engineering, computer science, communications systems, and information handling systems analysis/computer modeling. From this background, he will deal broadly with senior managers in the Agency and the Intelligence Community.

B. Major Duties

1. Responsible for Agency linkages, assuring the efficacy of working relationships between staff members and members of the Agency community. Assure that in the IHSA's planning, analyses, review, and guidance, there is an accurate appreciation of the specific information handling needs of relevant offices.

2. Assure that the real operational environment of the Agency is adequately and accurately reflected in standards, procedures, analyses, and strategic planning. He will assure that the Agency-wide personnel element of this factor is adequately considered and appropriately represented, including career and professional development patterns.

3. Negotiate information handling implementation plans, particularly where there are conflicting perspective relative to requirements, development plans, and allocation of implementation responsibilities. These office and directorate level negotiations must be conducted with tact, firmness, and technical knowledgeability to assure that the optimal resolution is attained relative to both user and Agency objectives.

4. In the performance of strategic planning for the Agency's information handling systems, he will use his expertise to identify critical areas requiring tradeoff studies and in-depth technical analysis. For such areas, he will define the specific issues to be studied and the parameters in terms of which the tradeoffs are to be developed. He will assure that the approach to the tradeoff analysis is consistent with the analytic requirements of the effort.

5. Guide and lead the development and implementation of Agency-wide instructions concerning information handling systems development, enhancement, and maintenance. These standards will cover procedures, documentation, standards and reporting requirements. In this effort, he will use the most modern, proved management techniques.

6. Guide the development and maintenance of a large database for management support within the Office of the IHSA. On the basis of the needed summary and project data, assure that the necessary data is collected, that it is organized in the optimal manner, and that security requirements are properly handled. It will be necessary for him to use his expert knowledge of the current operational environment so that the data requirements can be configured to the available data to the maximum extent possible. The added burden on operational units supplying information is to be minimized.

7. Substitutes and acts for the IHSA in his absence. Responsibilities include chairing approval reviews for the designs of new information handling systems and representing the Agency at meetings with senior managers from this and other Community agencies.

8. Evaluates information handling system development and maintenance plans with respect to schedule and cost realism. Projects cost and schedule values for ongoing projects, based on history-to-date and user assessments of technological factors.

9. Projects long-range technological developments and likely functionalities in the areas of his expertise.

C. Evaluation Factors

1. Knowledge and Abilities

He should possess a combination of three assets: a broad knowledge gained from personal experience of the Agency's information handling assets, procedures, and functions; specific management experience in the design and management processes for the development of large information handling systems, including responsibility for the development of at least one major system; and in-depth expertise in at least one of three areas: large processing systems development, communications and teleprocessing systems development, or systems software design and application.

In addition, he must have a broad knowledge of the existing technology in his area of expertise. As a consequence of experience in seeing new technology translated into new

systems capabilities, he must be able to project realistically the functional potentialities of current, emerging technology.

These knowledge resources must be combined with a demonstrated ability to influence effectively the management process of a large organization.

2. Difficulty of Work

Able to deal with and report through Agency's top management decision processes relative to information handling issues. The subject matter is highly technical and multidisciplinary, within the context of information handling systems, covering processing machinery, software engineering, communications, printing and reproduction, human factors, and records management.

He must be able to structure unstructured problems and direct efforts into high priority areas. In doing this, he must define key issues and prioritize objectives. He must be able to develop the top-level problem description or system definition and then effectively allocate resources to deal with it.

Able to effectively structure, charge, and guide analytic efforts. In the process, he will formulate the statement of work and structure an effective effort within the prescribed limitations of time and scope. In most instances, this will require a high level of technical expertise, since the time and scope will generally be sharply constrained to meet the exigencies of decision data, top-level inquiries, and program planning submittals. There must be knowledgeable and effective review of the work-in-progress and results. The results summarization must be clear and concise, focusing top-management's attention on the central issues or results.

In carrying out his responsibilities, the Deputy IHSA will meet with senior Agency management, chair decision panels in the IHSA's absence, and meet with Community intelligence system managers. He will negotiate inter-directorate requirements, will resolve resource allocation conflicts, and will have to be persuasive in communicating the need for changes in procedures or technological approaches. In doing so, he will constantly be required to use independent judgement.

3. Responsibility

The analyses, negotiations, strategic planning, and representations of the Deputy will have a direct impact on the effectiveness of the annual application of over [redacted] of the Agency's resources. The results of his work are subject to

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the guidance, review, and approval by the IHSA. As forwarded, they will be subject to review and approval at both directorate and DCI levels.

4. Personal Relationships

The Deputy's position involves contacts with Agency officials at the office, directorate, and Agency level. Externally, it involves contact at comparable management levels within other agencies and departments and corporate level management in the private sector. The contacts will involve negotiation of requirements, presentation of plans and recommendations, information exchange and planning with respect to information handling systems, coordination of activities and requirements, and assessment of emergent technologies. Matters for discussion frequently will be controversial. The incumbent's role with external contacts will require tact and persuasiveness.

Internally, the Deputy will be the leading technical professional in a group of high caliber, experienced professionals. He will have to command the respect of the subordinate professionals, and provide leadership in a mature and tactful manner. He must deal effectively with personal problems and provide valued career counseling. He must be experienced and mature in the evaluation of the performance of subordinates. He must have the self-confidence to seek the best professional skills and accept and capitalize on the best advice.

5. Supervision and Guidance Received

Receives his assignments and initiating policy from the IHSA including resources and priorities. The deputy will perform many of the same functions as the IHSA, acting under his general oral guidance, particularly in the areas of negotiations of implementation plans, development of Agency-level instructions, and IHS data requirements. The workload in these areas will simply be too great for the IHSA to carry alone, and the knowledgeable and authoritative independent supplmentations of the IHSA function is required.

The incumbent will also have some directly assigned responsibilities. Some will be IHS issues, some planning responsibilities, and he will be responsible for the office database. In all, he is required to act independently in executing his responsibilities, defining tasks, priorities, schedules, and work products.

Performance is evaluated based upon: the acceptance of plans and recommendations by senior Agency management, the degree

to which the incumbent maintains good personal relationships with the management levels involved, the effectiveness with which he functions at a systems level, and the management expertise displayed in developing strategic plans and policy.

A. Position Identity

System Software Specialist (IHSA) DDA, Position 0000. The System Software Specialist reports to the IHSA (Information Handling Systems Architect) and is the lead specialist in systems software in the Office of the IHSA. He is familiar with both operating systems and database management systems, a recognized expert in one of them. He is responsible for specific concerns within the Office of the IHSA which involve systems software.

B. Major Duties

1. Responsible for strategic planning with respect to general service central processing systems. Concerns will include expandability, security, and robustness of various central processing architectural alternatives, which have the potential of meeting general service requirements.

2. Responsible for evaluating prototype planning, and strategic planning with respect to secure operating systems and hardware with security enhancing firmware. Will assess tradeoffs between security and performance, determining potential utility of various approaches and their appropriate applications. He will monitor progress of key efforts for the development of secure operating systems.

3. Responsible for evaluating message handling systems. Concerns include dissemination and distribution, flexibility and control, and security. Centralized versus distributed message handling facilities to meet the Agency's long-range needs will be evaluated.

4. Responsible for evaluating text processing systems. Concerns will include independent mechanizations on dedicated computing machinery versus software operation on a mainframe in a time-shared environment.

5. Responsible for elements of system design relating to systems software utilities and the techniques of their incorporation. Included are transaction recordation, backup and recovery, archival, compilation, and linkers and editors.

6. Responsible for strategic planning with respect to database management systems. Concerns include standards for query languages, ability to select a small family of next-generation database management systems that can meet all the Agency's long-range needs, and the definition of prototype applications to evaluate promising new languages.

7. Responsible for concerns relative to the harmonization of files or databases that interoperate and for configuration management standards and planning with respect to files and databases.

8. Responsible for Concerns relative to community access to files. will investigate and analyze facilities for multiple

security level access to files and evaluate effectiveness of proposed approaches for multilevel access.

9. Responsible for design aspects relative to operating system and database management system architectures and architectural requirements in distributed processing systems. Will contribute the operating system and database management system functional design requirements to any Agency prototype distributed processing systems.

C. Evaluation Factors

1. Knowledge and Abilities

He should have expert knowledge of systems software, with specific expertise in either operating system or database management systems. A general knowledge of system utilities and proprietary software packages which operate in the systems environment is also required. Included are such functionalities as transaction handlers, compiler link editors, instrumentations packages, and diagnostic software.

He must have demonstrated knowledge of the information handling systems development process and of the particular aspects and roles of systems software in that process. This knowledge should have been gained through exercising a significant management function, and he must be able to apply that knowledge to strategic planning and system design evaluations. In all his analyses and planning, he must be practical in terms of evaluating the potentialities of emerging technology and of the status, or the level of development, of new functionalities. He must also be able to assess the interface characteristics of one systems software functionality with other functionalities.

He must have a demonstrated ability to work well with senior managers. In this context, he must be able to explain simply and lucidly what are the implications of various alternatives. He must be persuasive in presenting the solutions he believes are in the best interest of the Agency, although sometimes they may not be in concurrence with those of users or developers. In all cases, he must be able to accept adverse judgments gracefully.

2. Difficulty of Work

Able to deal with and report through Agency's top management decision processes relative to information handling issues. The systems software subject matter is one of the most complex and technically sophisticated area of information handling systems development. It requires a general knowledge of the characteristics of all the adjunct elements which interact with systems software, such as host computers, mass storage devices, terminals, front end processors, and output devices.

In dealing with systems software, the Systems Software Specialist must be able to structure unstructured problems and direct efforts into high priority areas. In doing this, he must define the key issues and prioritize objectives. He must be able to develop the top-level problem description or system definition and then effectively structure the preferred allocation of resources to deal with it.

Able to effectively structure, charge, and guide analytic efforts. In the process, he will formulate the statement of work and structure an effective effort within prescribed limitations of time and scope. In most instances, this will require a high level of management as well as technical expertise; the time and scope will generally be sharply constrained to meet the exigencies of decision data, top-level inquiries, and program planning submittals. There must be knowledgeable and effective review of the work in progress and results. The results summarization must be clear and concise, focusing top-management's attention on the central issues or results.

3. Responsibility

The analyses, technical discussions, strategic planning and representations of the Systems Software Specialist will have a direct impact on the effectiveness of the annual application of over [redacted] of the Agency's resources. The results of his work are subject to the guidance, review, and approval of the IHSA. As forwarded, they will be subject to review and approval at both the directorate and DCI levels.

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4. Personal Relationships

The position of Systems Software Specialist requires broad contact with experts and senior managers throughout the Agency and Community. The contacts will involve discussions of requirements, discussions of alternative approaches, and long-range implications of alternatives, and coordination of activities. Matters of discussion will frequently be controversial. The incumbent's role with external contacts will require tact and persuasiveness.

Internally, the Systems Software Specialist will be responsible for systems software matters. He will be responsible for this aspect of strategic planning and harmoniously integrate systems software concerns into the total planning effort. He must have the self-confidence to seek and incorporate into his analyses and planning the best technical advice and analyses available.

5. Supervision and Guidance Received

The Systems Software Specialist receives his assignments and initiating guidance from the IHSA, including resources and priorities. In general, his assignments will be oral, and he will have occasional discussions with the IHSA or

the Deputy to discuss progress and problems. He will act independently in executing his assignments.

His performance will be evaluated upon: the acceptance of plans and recommendations by senior Agency management, the degree to which the incumbent maintains good personal relationships with the Agency's technical leaders involved in his area, the effectiveness with which he functions at a systems level, and the management expertise displayed in developing strategic plans and policy.

A. Position Identity

Information Handling System Development Management Specialist (IHSA) DDA, Position 0000. The Systems Development Management Specialist reports to the IHSA and is the lead specialist in the management of and management processes for information handling systems development in the Office of the IHSA (Information Handling Systems Architect).

B. Major Duties

1. Responsible for strategic planning with respect to systems development processes and procedures, and utility-type facilities not specifically assigned elsewhere.

2. Responsible for development of an holistically phased plan for systems development, in conjunction with the general strategic planning effort. Key considerations in the development of this plan include:

- o Agency-wide resources allocations in the light of priorities and constraints
- o Technological availabilities
- o Capitalization on private sector developments for the commercial marketplace
- o Agency investment requirements to get unique functionalities needed to support specified operational capabilities
- o Functional interdependence of various projects or functionality developments

3. Responsible for reviewing program development plans for:

- o Adequacy of planning, including milestones review and configuration management processes
- o Cost and schedule realism
- o Conformance with Agency guidance and requirements of prudent management

4. Responsible for Agency's information handling system management procedures and standards. Abstract from the procedures applied in large system development as practiced in DDS&T, NSA, and DoD, to produce guidance documents tailored to the unique needs of

the Agency as a whole. Incorporate an accommodation to the general Agency requirement to not only manage but contribute to the development in projects involving contracted software developments. Utilize Agency resources, delegating guidance document development where appropriate, but retaining ultimate responsibility.

5. Evaluate prototype efforts for congruency with respect to strategic plans. Considerations relative to prototype effort utility and configuration include:

- o The ability to transfer the prototype functionality to a central system if it proves valid and as useful as projected.
- o The compatibility of the prototype system with the strategic plan relative to the possibility of it becoming a standard, centrally supported component.
- o The implications with respect to the growth of the prototype functionality, such as hardware support and transfer to a central facility.

C. Evaluation Factors

1. Knowledge and Abilities

He must have expert knowledge of processes, procedures, and standards relative to the development of information handling systems. He should have specific knowledge of modern procedures used in the private sector and of DoD mandated procedures.

He must have demonstrated knowledge gained through specific management experience in the development of information handling systems. He must be able to apply that knowledge to strategic planning and to systems design evaluations. In all his analyses, he must be practical in terms of evaluating the functional integration of emerging technology. He must also be able to assess the program planning imperatives created by the interface requirement of new technology.

He must have a demonstrated ability to work well with senior managers. In this context, he must be able to explain simply and lucidly what are the implications of various alternatives. He must be persuasive in presenting the solutions he believes are in the best interest of the Agency, although sometimes they may not be in concurrence with those of users or developers. In all cases, he must be able to accept adverse judgments gracefully.

2. Difficulty of Work

Able to deal with and report through the Agency's top management decision processes relative to information handling issues. Proper strategic and project planning is highly complex and involves sophisticated processes. The key planning issues and features of the instant plans have to be presented lucidly and succinctly.

In evaluating or developing plans, the Development Management Specialist must be able to identify and focus on the critical path items. In developing plans, he must be able to develop a logical totality from a highly unstructured set of technology and programmatic information. He must be able to identify properly data input support needed and then to structure effectively the preferred allocation of resources to deal with it.

Able to effectively structure, charge, and guide analytic efforts. In the process, he will formulate the statement of work and structure an effective effort within prescribed limitations of time and scope. In most instances, this will require a high level of management as well as technical expertise; the time and scope will generally be sharply constrained to meet the exigencies of decision data, top-level inquiries, and program planning submittals. There must be knowledgeable and effective review of the work in progress and results. The results summarization must be clear and concise, focusing top-management's attention on the central issues or results.

4. Personal Relationships

The position of Development Management Specialist requires broad contact with experts and senior managers throughout the Agency and Community. The contacts will involve discussions of requirements, discussions of alternative approaches, and long-range implications of alternatives, and coordination of activities. Matters of discussion will frequently be controversial. The incumbent's role with external contacts will require tact and persuasiveness.

Internally, the Development Management Specialist will be responsible for time-shared project plans analyses and the development of the architecture of strategic plans. He will harmoniously integrate the various functionality developments into the architecture of the plan. He must have the self-confidence to seek and incorporate into his analyses and planning the best technical advice and analysis available.

5. Supervision and Guidance Required

The Development Management Specialist receives his assignments and initiating guidance from the IHSA, including resources and priorities. In general, his assignments will be oral, and he will have occasional discussions with the IHSA or the Deputy to discuss progress and problems. He will act independently in executing his assignments.

His performance will be evaluated upon: the acceptance of plans and recommendations by senior Agency management, the degree to which the incumbent maintains good personal relationships with the Agency's technical leaders involved in his area, the effectiveness with which he functions at a systems level, and the management expertise displayed in developing strategic plans and policy.

A. Position Identity

Communications Specialist (IHSA) DDA, Position 0000. The Communications Specialist reports to the IHSA (Information Handling Systems Architect) and is the lead specialist for communications in the Office of the IHSA. He is a recognized expert in communications systems and is knowledgeable concerning communication networks architecture, networks nodal functions, equipment interoperation, and cryptographic matters.

B. Major Duties

1. Responsible for communications network, strategic planning, and evaluations. Included concerns are:

- o Network robustness
- o Time-phased adequacy of capacity
- o Effects of interface requirements with other systems
- o Degree of reliance to be placed upon network components provided by other agencies, based primarily on availability and priority considerations.

2. Responsible for review and analysis of network functionalities and components for total network compatibility. The development of the requirements for their nodal functions is a key concern.

3. Responsible for closely monitoring the development of communications protocols within the international community. Responsible for adopting or applying international standards, such as X.25, that may be applicable. Responsible for accrediting any changes in externally generated protocol standards required by unique aspects of the Agency's environment.

4. Responsible for strategic planning with respect to message dissemination and distribution systems. Concerns will include the hierarchical allocation of dissemination and distribution functions on a nonredundant basis. The objective will be to develop a strategic plan that leads to an integrated message dissemination and distribution function that may involve layered functionalities.

5. Responsible for strategic planning with respect to communications network switching systems. In this regard, he will monitor the development of packet switching system developments and

coordinate the Agency's planning with the technological development within the defense and intelligence community network switching. He will collect available documentation describing existing communications functionalities within the external community which might be relevant to the Agency's future needs.

6. Responsible for integrating long-range planning with respect to transmission and reception equipments into the overall information handling systems strategic plan. There will be concern in this regard that the long-range needs of other agencies for whom a service is being provided are adequately accommodated in the planning.

7. Responsible for planning and analysis with respect to secure communications equipments, focusing primarily on cryptographic equipment and TEMPEST requirements. Included in concerns with respect to internal and external secure communications will be:

- o User terminals
- o Encryption of electronically stored data
- o Secure voice
- o Ground loops involving computer and communications equipments which may produce or exacerbate TEMPEST problems.

8. Responsible for communications interface within the Office of the IHSA with associated agencies--principally Department of State and the Defense Communications Agency--relative to networks interoperation.

C. Evaluation Factors

1. Knowledge and Abilities

He should have expert knowledge of communications systems, with specific expertise in network architecture or message handling and switching systems. A general knowledge of communications protocols, TEMPEST, and cryptographic systems is also required.

He must have demonstrated knowledge, gained through participation in a significant management role, in the development process for communications systems. He must be able to apply that knowledge to strategic planning and to system design evaluations. In all his analyses and planning, he must be practical in terms of

evaluating the potentialities of emerging technology and of the status or level of development of new functionalities. He must also be able to assess the interface characteristics of one communications system functionality with others.

He must have a demonstrated ability to work well with senior managers. In this context, he must be able to explain simply and lucidly what are the implications of various alternatives. He must be persuasive in presenting the solutions he believes are in the best interest of the Agency, although sometimes they may not be in concurrence with those of users or developers. In all cases, he must be able to accept adverse judgments gracefully.

2. Difficulty of Work

Able to deal with and report through Agency's top management decision processes relative to information handling issues. Since communications systems impact virtually every element of information handling systems, the involvement of the Communications Specialist will be pervasive.

He should have a general knowledge of the characteristics of all the adjunct elements which interact with communications systems, such as computers, mass storage devices, terminals, and printers. He must also have a good knowledge of the techniques of software implementation of communications functions. In dealing with systems software, the Communications Specialist must be able to structure unstructured problems involving the foregoing elements and direct efforts into high priority areas. In doing this, he must define the key issues and prioritize objectives. He must be able to develop the top-level problem description or system definition and then effectively structure the preferred allocation of resources to deal with it.

Able to effectively structure, charge, and guide analytic efforts. In the process, he will formulate the statement of work and structure an effective effort within prescribed limitations of time and scope. In most instances, this will require a high level of management as well as technical expertise; the time and scope will generally be sharply constrained to meet the exigencies of decision data, top-level inquiries, and program planning submittals. There must be knowledgeable and effective review of the work in progress and results. The results summarization must be clear and concise, focusing top-management's attention on the central issues or results.

3. Responsibility

The analyses, technical discussions, strategic planning and representations of the Communications Specialist will have a direct impact on the effectiveness of the annual application of over [redacted] STAT million of the Agency's resources. The results of his work are subject to the guidance, review, and approval of the IHSA. As forwarded, they will be subject to review and approval at both the directorate and DCI levels.

4. Personal Relationships

The position of Communications Specialist requires broad contact with experts and senior managers throughout the Agency and Community. The contacts will involve discussions of requirements, discussions of alternative approaches, and long-range implications of alternatives, and coordination of activities. Matters of discussion will frequently be controversial. The incumbent's role with external contacts will require tack and persuasiveness.

Internally, the Communications Specialist will be responsible for communications matters. He will be responsible for this aspect of strategic planning and harmoniously integrate systems software concerns into the total planning effort. He must have the self-confidence to seek and incorporate into his analyses and planning the best technical advice and analyses available.

5. Supervision and Guidance Received

The Communications Specialist receives his assignments and initiating guidance from the IHSA, including resources and priorities. In general, his assignments will be oral, and he will have occasional discussions with the IHSA or the Deputy to discuss progress and problems. He will act independently in executing his assignments.

His performance will be evaluated upon: the acceptance of plans and recommendations by senior Agency management, the degree to which the incumbent maintains good personal relationships with the Agency's technical leaders involved in his area, the effectiveness with which he functions at a systems level, and the management expertise displayed in developing strategic plans and policy.

Information Handling Systems Analyst
Proposed Grade---GS-14

A. Position Identity

Information Handling Systems Analyst (IHSA) DDA, Position 0000. The IHS Analyst reports to the IHSA (Information Handling Systems Architect) and is the lead specialist for analysis of IHSs in the office. He is knowledgeable and experienced with respect to a broad range of analytic tools which can be applied to the analysis of systems and programs for both evaluation and design purposes.

B. Major Duties

1. Responsible for analysis of IHS networks. He will use a variety of techniques, such as Monte Carlo type event simulation, and analytic formulations, to describe the performance of alternative architectures.

Subjects of analysis will be proposed projects and programs relevant to the strategic planning process of the office. He will develop tradeoff curves of performance versus key parameters, to support decisions with respect to the network architecture and required investments in nodal equipments.

2. Responsible for analysis of performance of new processor/software systems. He will apply queuing theory techniques in evaluating the throughput capability of such new processor/software configurations as whole text processing systems, relational databases with Agency-characteristic schemas, and secure operating systems with various database systems.

3. Responsible for resource allocation type analyses. In the performance of these analyses, he shall apply a variety of analytic techniques, including linear programming and PERT with load-leveling. He may also be required to execute Delphic-type approaches with scoring and weighting to translate reviewers' judgements into final relative merits of competing architectural configurations.

4. Responsible for technology projection analyses using historical data. He will apply various types of performance growth functions in a regression analysis environment to project future performance. In performing such analyses, he will work under the guidance of the technology specialist who has cognizance of the technology involved, to assure that the appropriate functions are being applied and that the results are physically realistic. He will use his expertise to select and apply regression functions appropriate to the technology.

5. He will develop application software to implement his analyses, using higher order languages, such as FORTRAN, APL, GASP, or LISP. In developing his packages, he will use structured design and adhere to the general precepts of structured programming. His packages will each be approximately documented in terms of design, implementation, and operation.

6. He will provide expertise to the IHSA concerning the relative merit of various higher order languages in relation to specific system requirements. He will review software packages for adherence to appropriate standards and practices, as may be requested by the IHSA.

7. He will monitor and guide analytic efforts relative to the architectural concerns of the IHSA as may be performed by other Agency components or contractors. In some instances, he may serve as COTR for contractor efforts.

C. Evaluation Factors

1. Knowledge Required by the Position

The Information Handling Systems Analyst must be an analyst skilled in the array of analytic techniques relevant to IHSs. Specifically, included are simulation and analytic modeling and statistical analysis techniques.

In terms of simulation analysis, he must be able to define the proper random event distributions to be used at the various nodal points in a model based on a proper assessment of statistically defined input data. He must then be able to determine the number of replications required to achieve his predefined accuracy objectives. Alternatively, he must be able to estimate the accuracy of the result for a given number of trials. He must be sensitive to the various special problems that can arise in terms of the results in complex, nonlinear systems.

In terms of analytic techniques, he must be able to formulate linear systems problems in terms of stochastic differential or integral equations. In this context, he must know queuing theory and be able to apply it to calculate processing throughput capabilities for various processing system configurations. He must also be able to apply it to calculate communications network and bus throughput, under various line disciplines and protocols.

His statistical analysis skills must include a general familiarity with at least one of the several statistical

analysis packages available in the Community, such as the SPSS, IMSL, or BMD. He should also be able to write statistical analysis programs as necessary in order to be able to apply special functions or incorporate special solution seeking techniques.

He must also have experience and knowledge with respect to higher order languages. He will be expected to expand that knowledge within his position to develop a good understanding of the characteristics of all the higher order languages in use within the Agency and proposed for such use. In order to do so, he must have an understanding of such language elements as, instructions sets, syntax, data structures, and variable declarations.

2. Supervisory Controls

The Information Handling Systems Analyst will report to and receive his instructions from the IHSA. He will operate in a collegial environment as the senior Analyst. As such, he will work closely with the other professional specialists on the staff. He will, on occasion, take guidance from these staff members, particularly the Deputy IHSA.

His work will be reviewd by the IHSA for conformity with guidance, proper selection of analytic tools, and adherence to general policies.

3. Guidelines

The Information Handling Systems Analyst will operate primarily on the basis of oral guidance. For efforts of significant scope, he will typically be asked to prepare a statement of work for his intended analytic effort. Such statements will have to be closely coordinated with the other staff members with respect to technological factors. The formulation of his larger analytic effort will require the use of excellent judgement to select the appropriate analytic technique for dealing with the problem at hand. Furthermore, the analytic formulation must be specifically targeted on the questions to be answered. In other words, the analyst must be able to select the analytic technique on the basis of the problem characteristics, not force fit analytic procedures with which he may be comfortable, to the problem at hand.

4. Complexity

The Information Handling Systems Analyst begins his analytic efforts by structuring the problem. In the top-level management environment in which he will operate, he will

usually be dealing with unstructured problems, so he must be skillful and insightful in this environment. A key aspect of the structuring of the problem is the formulation of the questions to be answered.

Pursuant to the structuring of the problem, the Analyst must break it up into integral analytic units. These units must then be developed into a time phased work plan, accomplishable within the allowed time.

The Analyst must then develop the analytic formulations for each work unit and implement those functionalities. Because there will usually be stringent time and scope constraints, there is a premium on the Analyst being able to use powerful analytic techniques wherever possible, in preference to simulation techniques. This requires mastery of advanced and sophisticated analytic techniques, including those involving stochastic processes.

5. Scope and Effect

The analyses performed provide key input data for the determinations of the optimum information handling system architectures for the Agency. The scope is broad. Involved are communications, processing, and storage and printing services to all the operating units of the Agency. Affected are the annual investment of over [redacted] of the Agency's resources. STAT

The objectives of these analytic efforts are to provide: the most cost-effective service consistent with security and robustness constraints; timely provision of new functionalities needed by operating organizations; and an interoperating whole made up of large number independent functionalities.

6. Personal Contacts

The position of IHS Analyst requires broad contact with experts and senior managers throughout the Agency, and sometimes in the Community. The contacts will involve discussions of requirements, approaches, and long-range implication of alternatives and coordination of activities. Matters of discussion will frequently be controversial. The incumbent must exercise tact and be persuasive.

Internally, the IHS Analyst will closely interface with the other staff members, translating functionalities in various technological areas into analytic descriptions of performance. He must work smoothly and cooperatively with these

professionals to provide integrated analytic evaluations. He must have the self-confidence to seek and incorporate into his analyses and planning the best technical advice and analyses available.

7. Purpose of Contacts

The purposes of his contacts are to develop accurate models of IHS architectures, as described in the previous paragraphs.

8. Physical Demands

The work is mostly sedentary. Some local and distance travel is required for technical discussions.

9. Work Environment

The IHS Analyst works in an office environment. He will extensively use a visual display terminal.